



Application No. 10/583,713
Docket No. 8030-1014

AMENDMENTS TO THE SPECIFICATION:

Cancel pages 7-13.

Page 14, cancel lines 1-13.

Page 18, replace the paragraphs beginning on line 3 and ending on line 6 with the following amended paragraphs:

--Fig. 29 is an explanatory drawing showing a ~~state in which the model in Fig. 7 is formed in the film~~ step index optical waveguide bent structure model.

Fig. 30 is an explanatory drawing showing a ~~state in which the model in Fig. 7 is formed in the film~~ step index optical waveguide bent structure model.--

Page 50, replace the paragraph beginning on line 9 with the following amended paragraph:

--As a matter of course, if the outgoing angular range of the light-outgoing direction converting film does not match the angular range of diffusion of the incident light of the diffusion film, part of the projector light does not diffuse in the direction in which the observer exists, and hence the usage efficiency of the projector light is lowered. Therefore, it is preferable that these angular ranges match, and at least it is necessary that 50 percent of the outgoing angular range θ_{out} of the light-outgoing direction converting film is included in the incident angular range of diffusion film ~~$\theta_{bend-in}$~~ θ_{in} .--

Page 65, replace the paragraph beginning on line 17 and bridging pages 65 and 66 with the following amended paragraph:

--The light beam 17 is a light incoming in parallel with the optical axis of the first linear gradient index optical waveguide 4₁ (hereinafter, referred to as the optical waveguide 4₁) to a position of the optical axis, and this light travels straight ahead in the optical waveguide 4₁, and then enters into the second linear gradient index optical waveguide 4₂ (hereinafter, referred to as the optical waveguide 4₂) which is inclined by $-\theta_{NA0}/n$ at a position advanced by $P/2$. Therefore, the incident angle into the optical waveguide 4₂ is θ_{NA0}/n . Since the lengths of the respective linear gradient index optical waveguides are $P/2$, the outgoing angle of the optical waveguide 4₂ is $-\theta_{NA0}/n$ with respect to the optical axis of the optical waveguide 4₂. Since the third linear gradient index optical waveguide 4₃ (hereinafter, referred to as the optical waveguide 4₃) is inclined by $-\theta_{NA0}/n$ with respect to the second optical waveguide 4₂, the incident angle of the light beam [[7]] 17 is 0° , and hence the light beam 17 travels straight ahead in the linear gradient index optical waveguide of the odd number sequence, and changes the direction of travel and curved from the incident angle: $+\theta_{NA0}/n$ to the outgoing angle: $-\theta_{NA0}/n$ in the linear gradient index optical waveguide of the even number sequence. On the other hand, the light beam 16 shows a mode in which the state in the linear gradient index optical waveguides of the odd number

sequence and the even number sequence of the light beam 17 are exchanged.--

Page 76, replace the paragraph beginning on line 15 with the following amended paragraph:

--Since the outgoing angle of the light is also within the range between -90° and 90° with respect to the normal line to the film plane, $\theta_{out2} \geq -90^\circ$ and $\theta_{out1} \leq 90^\circ$ are established in the expression (2-16). From these constraints and the expressions (2-12) and (2-15), a condition of the layer inclination angle near the ~~incident~~ outgoing surface $\theta_{bend-out}$ are expressed by the following expression using the radius of curvature of the layer near the ~~incident~~ outgoing surface R_{out} , the angle of propagation in the layer θ_{NA0} , and the pitch P of the light propagation.--

Page 94, replace the paragraph beginning on line 20 and bridging pages 94 and 95 with the following amended paragraph:

--In the actual system, as shown in Fig. 33, the light changes the direction three times by the mirrors M1, ~~[[M2]]~~ M3 and the non-spherical mirror M2 on the backside of the screen 10, and the output light from the optical engine 20 is bent transversely by the mirror M1 which is located immediately in front toward the side. Assuming that the depth of the actual system (a distance between the surfaces of the mirror M3 and the screen 10) is 20 cm, the height of the screen 10 is 1 m, and the distance between the centers of the lens and the mirror M1 is 40 cm, $b = 20 \text{ cm} \times 3 + 40$

cm = 1 m, $S_2 = 1$ m in the deployed optical system in Fig. 27. Assuming that the vertical length of an image display panel 21 (= S_1 in Fig. 27) including the DMD chip is 2.5 cm, $a = 2.5$ cm from the magnification $S_2/S_1 = 1 \text{ m}/2.5 \text{ cm} = 40 = b/a = 1 \text{ m}/a$, and the focal distance f of the lens is $f = 2.44$ cm from $1/a + 1/b = 1/f$. A lens diameter d is 2.4 cm. When $l_1 = 30$ cm, $l_2 = l_1 + S_2 = 130$ cm.--